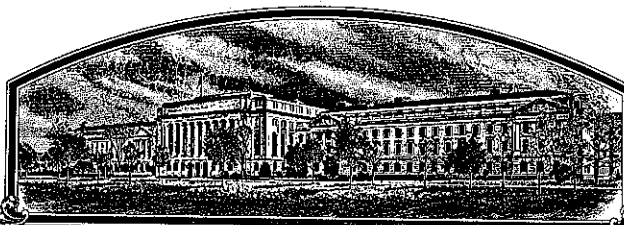


No.

9500271



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Virginia Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR PRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR USING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Jackson'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of November in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Martha A. Sturges
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

James H. Smith
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Virginia Agricultural Experiment Station		VA88-54-479	Jackson
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9500271 DATE AUGUST 11, 1995 FILING AND EXAMINATION FEE \$2325.00 + \$125.00 DATE 05/03/95 to 07/31/95 CERTIFICATION FEE \$300.00 DATE Oct. 18, 1995
Virginia Polytechnic Institute and State Univ. College of Agriculture and Life Sciences 104 Hutcheson Hall Blacksburg VA 24061-0402		540-231-3766	
6. FAX (include area code)			
540-231-4163			
7. GENUS AND SPECIES NAME	8. FAMILY NAME (Botanical)		
Triticum Aestivum L.	Gramineae		
9. CROP KIND NAME (Common name)			
Wheat, common			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)			
Agricultural Experiment Station of Virginia Tech			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			14. TELEPHONE (include area code)
Carl A. Griffey Crop and Soil Environmental Sciences Virginia Tech Blacksburg, VA 24061-0404			540-231-9789
			15. FAX (include area code)
			540-231-3431
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)?			
<input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO			
Foundation seed was sold to certified seed growers in Fall 1994 and certified seed to producers in the U.S.A. in Fall 1995.			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
R. Q. Cannell			
NAME (Please print or type)		NAME (Please print or type)	
R. Q. Cannell			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Director, VAES	9-15-95		

Jackson Wheat

14A. Exhibit A: Origin and Breeding History

Genealogy and Breeding Method. Jackson was derived as an F_5 head selection from the cross 'Saluda'/'Coker 762'. The original cross was made in 1982.

Selection and Advancement of the Variety. The segregating population was advanced using a modified bulk breeding method, and Jackson was selected in 1987. Jackson, formerly designated VA 88-54-479, was grown in an observation plot in 1988 and, prior to its release, was tested in the Virginia Small Grains Variety Test from 1989 to 1992.

Multiplication and Purification. Within the limits of biological expectation, Jackson has remained stable and uniform in composition through six generations of selfing. In the 1991-92 crop season, 450 F_{10} headrows of Jackson were planted at Warsaw and obvious variant rows were removed. The remaining rows were harvested individually, and seed from 322 of these rows was planted separately in 45 ft² plots at the Virginia Foundation Seed Farm in the fall of 1992. Residual seed from these 322 rows was used in greenhouse evaluations to identify any additional variants and as a source of Breeder seed for long-term storage. Among the 322 plots, those shown to possess or consist entirely of variants, based on visual observation and disease reaction in the greenhouse, were removed prior to harvest. The remaining plots were harvested in bulk and used as the primary source of Breeder seed. A low percentage of variant types, consisting of not more than 1% of tall plants, are present in Jackson. However, Breeder seed of Jackson was shown to be genetically stable in the sense that the variety can be maintained and reproduced via seed without changing its characteristics.

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ADDENDUM TO PV APPLICATION NO. 9500271, WHEAT, 'JACKSON'**Exhibit A: Origin and Breeding History: Selection Criteria**

The selection criteria used in breeding 'Jackson' wheat were resistance to plant diseases, specifically resistance to powdery mildew (*Blumeria graminis*). Generally, selection also was based on time of head emergence, plant height, tolerance to lodging, yield potential, and test weight.

Exhibit B: Novelty Statement

Of the characters by which Jackson differs from 'Saluda', the one of major significance is Jackson's superior resistance to powdery mildew. During the past three years (1992-94), powdery mildew severities (0-100% leaf area covered) averaged over two locations for Jackson have been 13, 4, 15% compared with 62, 31, 40% for Saluda [with L.S.D. ($p=0.05$) values of 6, 5, 5]. The color of Jackson at the booting stage is blue green (Munsell 10 G Hue, value 5, chroma 8), while that of Saluda is green (Munsell 2.5 G Hue, value 5, chroma 12). Plant height of Jackson averaged over three to five locations for the past three years has been 41, 38, 36 inches compared with 40, 36, 34 inches for Saluda [with L.S.D. ($p=0.05$) value of 1 inch]. Date of head emergence (50% of heads emerged from boot), averaged over two to four locations, for Jackson and Saluda were identical in 1992 and 1995. Head emergence of Jackson was one day later than that of Saluda in 1993 and 1994 [L.S.D. (0.05) = 1 day]. Seedlings of Jackson are moderately resistant to stem rust (*Puccinia graminis*) races RKQS, RPQQ, and RTQQ, while those of Saluda are susceptible to these races.

Jackson Wheat**14B. Exhibit B: Novelty Statement**

Jackson is uniquely different from all known wheat cultivars, but is most similar to its parent Saluda. Both cultivars are similar in maturity, while Jackson is 5 cm taller than Saluda. Jackson has a blue green color at the boot stage, while Saluda is green. The anthers of Jackson are yellow with some red pigmentation, while those of Saluda are yellow. The flag leaf of Jackson is erect, while that of Saluda is recurved. Jackson has oval seed, while those of Saluda are ovate in shape. Jackson is moderately resistant to powdery mildew, while Saluda is susceptible to the prevalent populations found in Virginia. Over the past three years, Jackson has had an average mildew severity rating of 12% compared to 48% for Saluda. Jackson is resistant to races of stem rust that are capable of attacking Saluda.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Virginia Agricultural Experiment Station

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0402

FOR OFFICIAL USE ONLY

PVPO NUMBER

9500271

VARIETY NAME OR TEMPORARY
DESIGNATION

Jackson

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., or) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 = SOFT 2 = HARD 3 = OTHER (Specify)

1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS

NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINE 6 = LEEDS
7 = Coker 916 8 = Wakefield

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH

CM. TALLER THAN 7 = Coker 916 8 = Wakefield

CM. SHORTER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = NUGAINE 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTER COLOR:

1 = YELLOW 2 = PURPLE
*Yellow with some red pigmentation

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT
Predominantly type 2, occasionally type 1

Hairiness of last
internode of rachis: 1 = ABSENT 2 = PRESENT

NO. OF NODES (Originating from node above ground)

Waxy bloom: 1 = ABSENT 2 = PRESENT

Internodes: 1 = HOLLOW 2 = SOLID

CM. INTERNODE LENGTH BETWEEN FLAG LEAF
AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT

Hairiness: 1 = ABSENT 2 = PRESENT
*short hairs

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED
3 = OTHER (Specify):

Flag leaf: 1 = NOT TWISTED 2 = TWISTED

Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

MM. LEAF WIDTH (First leaf below flag leaf)

CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:

Density: 1 = LAX 2 = DENSE
 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
 4 = OTHER (Specify) tapering to strap

Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

CM. LENGTH
 MM. WIDTH

12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
 3 = LONG (CA. 9 mm.)
 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
 3 = WIDE (CA. 4 mm.)

Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
 4 = SQUARE 5 = ELEVATED 6 = APICULATE
 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

1 = WHITE 2 = RED 3 = PURPLE
 *Predominantly red, occasionally white

14. SEEDLING ANTHOCYANIN:

1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL
 Check: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG
 Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
 4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

MM. LENGTH
 MM. WIDTH
 GM. PER 1000 SEEDS

17. SEED CREASE:

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
 2 = 80% OR LESS OF KERNEL 'CHRIS'
 *Narrow 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
 2 = 35% OR LESS OF KERNEL 'CHRIS'
 *Middeep 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) *Postulated resistance genes

STEM RUST (Races) *Sr5
 LEAF RUST (Races) *Lr11+
 STRIPE RUST (Races)
 LOOSE SMUT

POWDERY MILDEW
 BUNT
 OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

SAWFLY
 APHID (Bydv.)
 GREEN BUG
 CEREAL LEAF BEETLE

OTHER (Specify) Hessian Fly Race L
 HESSIAN FLY RACES:
 GP
 A
 B
 C

D
 E
 F
 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Saluda	Seed size	Saluda
Leaf size	Saluda	Seed shape	Saluda
Leaf color	Saluda	Coleoptile elongation	Saluda
Leaf carriage	Saluda	Seedling pigmentation	Saluda

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

Table 1. Comparative performance of Jackson wheat in Virginia, 1990-1992.⁽¹⁾

Variety	Grain Yield Bu/Ac [15]	Bushel Weight Lbs [16]	Date Headed Mar 31+ [8]	Plant Height Inches [9]	Lodging % [10]	Powdery Mildew % [10]	Leaf Rust % [10]	Septoria ⁽²⁾ <i>tritici</i> 0-9 [5]	BYDV ⁽³⁾ 0-9 [3]
Jackson	79	60.1	27	38	12	12	7	1.7	2.3
Saluda	66	60.5	27	36	4	48	10	2.4	3.8
Madison	72	58.1	24	37	4	18	10	2.6	2.2
Florida 302	74	57.0	27	40	1	21	8	2.5	3.2
GA-Gore	74	58.6	23	36	13	6	1	2.7	3.0
FFR 555W	77	58.2	28	37	2	12	19	1.6	2.5
Pioneer 2548	75	58.1	28	35	1	12	4	2.5	1.8
Coker 916	68	58.4	25	35	6	7	9	2.5	4.0
Coker 983	70	59.8	26	34	1	4	40	1.8	2.8
Coker 9835	73	57.5	26	33	3	12	1	2.1	3.3
Coker 9803	75	61.4	25	35	9	7	5	1.3	2.1
LSD (0.05)	3								

⁽¹⁾The number in brackets below column headings indicates the number of tests on which data are based.⁽²⁾Disease ratings based on 0-9 scale, where 0=resistant and 9=susceptible.⁽³⁾BYDV=Barley yellow dwarf virus.

Table 5.1 Milling and baking quality of Jackson Wheat grown in Virginia Variety Tests, 1990-1992.

Milling Score ⁽¹⁾								
Variety	1990	1991	1992					
	Composite							
			Blacksburg	Blackstone	Holland	Loudoun	Painter	Warsaw
Jackson	98.9 B	96.5 B	98.4 B	99.1 B	98.9 B	94.4 B	94.1 C	94.9 C
Saluda	101.2 A	99.1 B	97.5 B	102.2 A	98.8 B	100.2 A	93.8 C	93.7 C
Massey	103.5 A	---	100.0 A	100.0 A	100.0 A	100.0 A	100.0 A	100.0 A
Madison	101.9 A	---	96.8 B	99.3 B	95.5 B	105.2 A	91.5 C	92.7 C
Wakefield	103.1 A	100.0 A						

Baking Score ⁽¹⁾								
Variety	1990	1991	1992					
	Composite							
			Blacksburg	Blackstone	Holland	Loudoun	Painter	Warsaw
Jackson	93.9 C	87.3 D	102.2 A	87.8 D	84.4 E	96.8 B	74.4 F	78.1 F
Saluda	88.7 D	65.5 F	101.7 A	92.2 C	83.6 E	99.5 B	77.6 F	77.9 F
Massey	90.2 C	---	100.0 A	100.0 A	100.0 A	100.0 A	100.0 A	100.0 A
Madison	80.4 E	---	106.4 A	105.1 A	98.0 B	110.0 A	80.9 E	89.7 D
Wakefield	103.9 A	100.0 A						

(1) High scores indicate the best quality. Scores are grouped in classes 'A' through 'F', according to performance relative to a check cultivar.

9500271

Table 5.2 Milling and baking quality of Jackson wheat grown in the 1991-92 Uniform Southern Soft Red Winter Wheat Nursery.

	Southern Region		Northern Region	
	Milling ⁽¹⁾ Score	Baking ⁽¹⁾ Score	Milling Score	Baking Score
Jackson	93.2 C	90.0 C	92.1 C	67.2 F
Saluda	93.2 C	88.4 D	96.2 B	86.8 D
Coker 9835	103.0 A	92.1 C	98.8 B	91.1 C
Florida 302	100.0 A	100.0 A	100.0 A	100.0 A

⁽¹⁾ High scores indicate the best quality. Scores are grouped in classes 'A' through 'F' according to performance relative to a check cultivar.

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Jackson Wheat**14E. Exhibit E. Basis of Applicant's Ownership**

The owner of Jackson wheat is the Virginia Polytechnic Institute and State University, of which the Virginia Agricultural Experiment Station is a part. Employees charged with developing this new cultivar as a condition of their employment understand that ownership rests with Virginia Polytechnic Institute and State University pursuant to university policy on intellectual property.

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